REMARKS

Prior to entry of this Amendment:

- Claims **1-134** were pending in the present application
- Claims **1-66, 78-80, 85-88, and 94-132** are withdrawn from consideration
- Claims **67-77, 81-84 and 89-93** stand rejected

Upon entry of this Amendment, which is respectfully requested for the reasons set forth below:

- Claims **67-77, 81-84 and 89-93** will be pending
- Claims **67, 81 and 89** will be amended
- Claim **133** will be added

A. Amendment to the Specification

The Specification was amended at page 19, line 17 to correct a typographical error in the page citation to the listed reference. No new matter has been added.

B. Amendment to the Claims

Claims 67, 81, and 89 have been amended to more clearly define the claimed invention. Support for these amendments is found throughout the specification, for example, at page 6, lines 16-18 and page 28, line 7-9 and line 15-17. Claim 133 has been added. Support for this new claim is found throughout the specification, for example, at page 32, lines 15-20. Accordingly, no new matter has been added by these amendments and entry therefore is respectfully requested.

C. Rejection under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 67-77, 81-84 and 89-93 under 35 U.S.C. § 112, second paragraph, as being indefinite and failing to particularly point out and distinctly claims the subject matter which applicant regards as the invention. Specifically, the Examiner objects to the terms "long," "low," "short," and "high" as not defined by the claim. While Applicants believe the terms

are sufficiently defined within the present specification, Applicants have amended the claims to recite the ranges indicated in the specification. Support for the amendments may be found at least at page 6, lines 16-18 and page 28, line 7-9 and line 15-17.

The Examiner also asserts that the phrase "a Blumlein configuration transmission line" recited in claim 90 is unclear. Applicants respectfully submit that a "Blumlein configuration" as used in the claim is a term of art in electrical circuit design that would be understood by one of ordinary skill in the art. As such, Applicants believe no amendment is necessary to address the Examiner's rejection.

In view of the above statements and amendments, Applicants respectfully request removal of the instant rejection under 35 U.S.C. § 112, second paragraph.

D. Rejections under 35 U.S.C. § 102

Claims 67-77 are rejected under 35 U.S.C. § 102(b) as being anticipated by "Nanosecond pulsed electric field (nsPEF) effects on cells and tissues: apoptosis induction and tumor growth inhibition" to Beebe et al., hereinafter "Beebe."

Claims 67-72, 74-77, 81-84 and 89-93 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application No. 10/313,953 to Gunderson et al., hereinafter "Gunderson."

Applicants respectfully traverse the rejections and submit that the presently claimed invention is not shown or described by Beebe or Gunderson.

1. 102(b) Rejection Under Beebe

a. Independent Claim 67

67. A pulse generator for generating electrical pulses comprising:

a first circuit, ~~for~~ the first circuit generating a first pulse having a ~~long~~ duration of 700 nanoseconds up to and including 40 milliseconds and ~~low~~ voltage amplitude of .1 kV/cm up to and including 5 kV/cm;

a second circuit, ~~for~~ the second circuit generating a second pulse having a ~~short~~ duration of 700 picoseconds up to and including 1.3 milliseconds and ~~high~~ voltage amplitude of 1 kV/cm up to and including 1000kV/cm; and

a control circuit for controlling the timing of said first circuit and said second circuit to respectively generate said first pulse and said second pulse.

Applicants respectfully submit that the cited reference is not relevant to the above identified claim.

The Examiner has interpreted the limitations of claim 67 as an intended use, indicating "intended uses for recited circuits bear limited, if any, patentable weight for prior art rejections." (Office Action at p. 7). For purposes of clarification, Applicants have amended claim 67 to indicate the properties of the first and second circuits, namely, the first circuit generates "a first pulse having a duration of 700 nanoseconds up to and including 40 milliseconds and voltage amplitude of .1 kV/cm up to and including 5 kV/cm" and the second circuit generates "a second pulse having a duration of 700 picoseconds up to and including 1.3 milliseconds and voltage amplitude of 1 kV/cm up to and including 1000kV/cm."

Without conceding the Examiner's interpretation of the claim that the "limitations 'the first circuit' and 'the second circuit' recited in claims 67 is interpreted as either (i) two structural distinct entities or (ii) one structural entity that is intended for and capable of generation of both 'low voltage amplitude' and 'high voltage amplitude'" (Office Action at p. 7), Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of anticipation of claim 67. Specifically, the Examiner has failed to demonstrate that Beebe teaches or suggests at least **both** a first circuit that generates "a first pulse having a duration of 700 nanoseconds up to and including 40

milliseconds and voltage amplitude of .1 kV/cm up to and including 5 kV/cm" **and** a second circuit that generates "a second pulse having a duration of 700 picoseconds up to and including 1.3 milliseconds and voltage amplitude of 1 kV/cm up to and including 1000kV/cm." In fact, nothing in Beebe even hints at a pulse generator capable of generating a first pulse and a second pulse with the characteristics required by the claim. The Examiner does not indicate otherwise in the record.

As the instant claim is an apparatus, and as the Examiner has failed to demonstrate that Beebe teaches or suggests an apparatus that generates **both** electrical pulses as required the claim, Beebe is incapable of anticipating at least claim 67.

Additionally, the Examiner has failed to indicate in the record that Beebe teaches or suggests "a control circuit for controlling the timing of said first circuit and said second circuit to respectively generate said first pulse and said second pulse" as required by claim 67. The Examiner fails to establish a *prima facie* case of anticipation of claim 67 for at least this additional reason.

Lastly, Beebe is concerned with "apoptosis and tumor growth inhibition." (*See* title). The reference provides the commonly understood definition of apoptosis as "a series of natural enzymatic reactions that have evolved for the natural elimination of unhealthy, genetically damaged, or otherwise aberrant cells that are not needed or not advantageous to the well-being of the organism." (Beebe at 286). In contrast, "[t]he present invention is directed to the method of introducing an agent into a cell comprising the application of nanosecond pulse electric fields ('nsPEFs')." (Specification at page 5, lines 1-2). As the present invention is directly to methods of preserving cells treated with electrical pulses, Applicants respectfully assert that Beebe is not analogous to the present invention.

In view of Applicants' clarifying amendments and the arguments presented above Applicants respectfully submit that Beebe is incapable of teaching each of the limitations of claim 67. Consequently, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

b. Dependent Claims 68-77

In view of the arguments presented above for the independent claims 67, Applicants respectfully submit that the corresponding dependent claims 68-77 are allowable for the reasons discussed above as well as additional limitations recited in each dependent claim also interpreted in combination. As such, Applicants respectfully submit that claims 68-77 are not anticipated by the cited reference and respectfully request that the rejection under 35 U.S.C. § 102(b) of these claims be withdrawn.

c. Independent Claim 133

Applicants respectfully assert that new independent claim 133 is not anticipated by Beebe for the reasons given above.

2. **102(e) Rejection Under Gunderson**

a. **Independent Claim 67**

The Examiner has interpreted the limitations of claim 67 as an intended use, indicating "intended uses for recited circuits bear limited, if any, patentable weight for prior art rejections." (Office Action at p. 9). For purposes of clarification, Applicants have amended claim 67 to indicate the properties of the first and second circuits, namely, the first circuit generates "a first pulse having a duration of 700 nanoseconds up to and including 40 milliseconds and voltage amplitude of .1 kV/cm up to and including 5 kV/cm" and the second circuit generates "a second pulse having a duration of 700 picoseconds up to and including 1.3 milliseconds and voltage amplitude of 1 kV/cm up to and including 1000 kV/cm."

Without conceding the Examiner's interpretation of the claim that the "limitations 'the first circuit' and 'the second circuit' recited in claims 67 is interpreted as either (i) two structural distinct entities or (ii) one structural entity that is intended for and capable of generation of both 'low voltage amplitude' and 'high voltage amplitude'" (Office Action at p. 9), Applicants respectfully

submit that the Examiner has failed to establish a *prima facie* case of anticipation of claim 67 in view of Gunderson.

Specifically, the Examiner has failed to show on the record that Gunderson teaches or suggests a pulse generator capable of generating **both** "a first pulse having a duration of 700 nanoseconds up to and including 40 milliseconds and voltage amplitude of .1 kV/cm up to and including 5 kV/cm" **and** "a second pulse having a duration of 700 picoseconds up to and including 1.3 milliseconds and voltage amplitude of 1 kV/cm up to and including 1000kV/cm" as required by claim 67. As the instant claim is an apparatus, and as the Examiner has failed to demonstrate that Gunderson teaches or suggests an apparatus that generates **both** electrical pulses as required the claim, Gunderson is incapable of anticipating at least claim 67.

Additionally, the Examiner has failed to indicate in the record that Gunderson teaches or suggests "a control circuit for controlling the timing of said first circuit and said second circuit to respectively generate said first pulse and said second pulse" as required by claim 67. The Examiner fails to establish a *prima facie* case of anticipation of claim 67 for at least this additional reason.

In view of the above arguments Applicants respectfully submit that Gunderson is incapable of teaching each of the limitations of claim 67. Consequently, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

b. Dependent Claims 68-72, 74-77, 81-84 and 89-93

In view of the arguments presented above for the independent claims 67, the Applicants respectfully submit that the corresponding dependent claims 68-72, 74-77, 81-84 and 89-93 are allowable for the reasons discussed above as well as additional limitations recited in each dependent claim also interpreted in combination. As such, Applicants respectfully submit that claims 68-72, 74-77, 81-84 and 89-93 are not anticipated by the cited reference and respectfully request that the rejection under 35 U.S.C. § 102(e) of these claims be withdrawn.

c. Independent Claim 133

Applicants respectfully assert that new independent claim 133 is not anticipated by Gunderson for the reasons given above.

Further, without conceding that Gunderson teaches or suggests any aspect of the present invention, Applicants respectfully assert that Gunderson fails to teach or suggest either a method or apparatus capable of generating "a first pulse having a duration of 700 picoseconds up to and including 1.3 milliseconds and voltage amplitude of 1 kV/cm up to and including 1000 kV/cm" **and** "a second pulse having a duration of 700 nanoseconds up to and including 40 milliseconds and voltage amplitude of .1 kV/cm up to and including 5 kV/cm" as required by claim 133. As such, independent claim 133 is not anticipate for at least this additional reason.

CONCLUSION

For all the reasons advanced above, Applicants respectfully submit that the rejections have been overcome and should be withdrawn. Applicants respectfully submit that the Application is in condition for allowance, and that such action is earnestly solicited.

Applicant herewith petitions the Director of the USPTO to extend the time for reply to the above-identified Office Action for an appropriate length of time, if necessary. Any fee due under 37 C.F.R. § 1.17(a) is being paid via the USPTO Electronic Filing System, or if not paid through EFS, please charge our Deposit Account No. 08-0219, under Order No. 0113019.00172US4 from which the undersigned is authorized to draw.

Respectfully submitted,

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